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EXAMINER

VLAHOS, SOPHIA

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/954,663	Applicant(s) LYLE ET AL.	
	Examiner SOPHIA VLAHOS	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3, 6-7, 11, 13-14, 23-33, 34, 37-40, 44-45, 50, 53-55, 58, 60-64, 75, 80, 96-98, 100, 116-124, 126-129, 131-143 is/are allowed.
- 6) ☒ Claim(s) 22, 35, 67, 71, 76, 78, 101, 106, 107, 110 and 111 is/are rejected.
- 7) ☒ Claim(s) 71, 73, 77, 102-105, 108-109 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 3,6,7,11,13,14,22-32,34,35,37-40,44,45,50,53-55,58,60-64,67,71,73,75-78,80,96-98,100-111,116-124,126-129 and 131-143.

DETAILED ACTION

Oath/Declaration

1. The Declaration was received on 12/06/2007 and is acceptable.

Allowable Subject Matter

2. The indicated allowability of claims 22, 35, 67, 71, 76, 78, 101, 106-107, 110-111 is withdrawn. Rejections follow.

Claim Objections

3. Claims 71, 73 are objected to because of the following informalities:
Claim 71, lines 11-12 (after the preamble) recites: "...receiver, wherein the first stream of auxiliary data comprises audio data, wherein the first stream of auxiliary data is a stream of digital audio data..." this should be "...receiver, wherein the first stream of auxiliary data comprises **digital** audio data."
Claim 73 (lines 11-12) recites a similar limitation, and is also objected to for the same reason.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 22 is rejected under 35 U.S.C. 102(e) as being anticipated by Mair et. al., (U.S. 6,912,008).

With respect to claim 22, Mair et. al., disclose: an input for receiving auxiliary data (column 3, lines 3-9, 20-21, Fig. 3B, word 304 s9 bit is an auxiliary bit , see column 5, lines 14-15, bit S9 and Fig. 5 the system used to implement the encoding of Fig. 3, column 6, lines 22-36); an output configured to be coupled to a channel of the link and circuitry coupled to the input and configured for generating an output signal in response to said auxiliary data (Fig. 5, blocks 502, 506, column 6 lines 22-35, and column 3, lines 1-23) and asserting the output signal to the output for transmission over the channel, wherein the output signal modulates DC disparity of the channel and is indicative of auxiliary data, wherein the auxiliary data are audio data (see column 3, lines 6-22).

6. Claims 67, 71, 76, 78, 101, 106-107, 110-111 are rejected under 35 U.S.C. 102(e) as being anticipated by Pasqualino et. al., (U.S. 2002/0163598).

With respect to claim 67, Pasqualino et. al., disclose: at least one auxiliary data input for receiving auxiliary data (Fig. 2, block 217, audio input interface layer, receiving audio data and audio clock corresponding to auxiliary data); at least one video input for receiving video data (Fig. 2, block 215, video input interface receiving video data); at least one first channel output configured to be coupled to a first channel of the link

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(see Channel 0 of the TMDs link (to the right) and Fig. 7 showing more details); at least one second channel output configured to be coupled to a second channel of the link (Fig. 2, Fig. 7 Channel 1); at least one third channel output configured to be coupled to a third channel of the link (Fig. 2, Channel C); circuitry coupled between the video input and the first channel output (Fig. 2, blocks 214, 212 and 210), and configured to assert a first signal indicative of at least some of the video data to the first channel output in response to the video data (see Fig. 7, video data of Channel 0); circuitry coupled between the second channel output and at least one of said auxiliary data input (Fig. 2, blocks 214, 212, 210), and configured to assert a second signal indicative of a first stream of the auxiliary data to the second channel output in response to the auxiliary data (Fig. 7, see audio data of Channel 1); and circuitry coupled between at least one of said auxiliary data input and at least one of the first channel output and the third channel output (Fig. 2, blocks 214, 212, 210), and configured to assert a third signal indicative of at least one of a second stream of the auxiliary data and the first stream of auxiliary data to said at least one of the first channel output and the third channel output in response to the auxiliary data (channel C, transmits a pixel clock PCLK, (in accordance with the DVI standard) that is indicative of the audio clock ACLK, see paragraphs [0113]-[0114] Fig. 17 for example), wherein the first stream of auxiliary data is a stream of digital audio data (Fig. 7, see audio data of Channel 1), the second stream of auxiliary data determines a clock for the digital audio data (clock of Channel C), the third signal is indicative of the second stream of the auxiliary data, and the

transmitter is configured to assert the third signal over the third channel output (see paragraphs [0113]-[0114] the ACLK is derived from the PCLK).

Claim 71, as best understood , is rejected based on a rationale similar to claim 67 above.

With respect to claim 76, Pasqualino discloses: a transmitter (Fig. 2, transmitter paragraph [0014]) ; a receiver (Fig. 3, receiver paragraph [0015]); and a TMDS-like "TMDS" denotes "transition minimized differential signaling," the link has multiple data transmission channels (see Fig. 2, (right side) TMDS link, see channels 0-2, Fig.7, see that video data transmitted over channels 0-2), the transmitter is configured to transmit video data to the receiver over at least a first channel of the link (Fig. 7, Channel 1 see transmission of video data (from Tx to Rx)), and at least one of the transmitter and the receiver is configured to transmit a first stream of auxiliary data over a second channel of the link to the other one of the transmitter and the receiver (Fig. 7, see transmission over Channel 2 of auxiliary data audio data, (from Tx to Rx)), and at least one of the transmitter and the receiver is configured to transmit a second stream of auxiliary data over one of the first channel of the link and a third channel of the link to the other one of the transmitter and the receiver (Fig. 7, transmission over Channel 0 of auxiliary data, (from Tx to Rx), HSYNC, VSYNC, video related frame synchronization) and wherein the first stream of auxiliary data comprises audio data (see above audio data over channel

2), and the TMDS-like communication link is a Digital Video Interface link (see paragraph [0046] transmission of DVI link)..

With respect to claim 78, Pasqualino discloses: a transmitter (Fig. 2, transmitter paragraph [0014]); a receiver (Fig. 3, paragraph [0015]); and a TMDS-like communication link between the transmitter and the receiver, wherein "TMDS" denotes "transition minimized differential signaling," the link has multiple data transmission channels (see Fig. 2,(right side) the TMDS link, and Channels 0-2, shown in Fig 7 to transmit video data), the transmitter is configured to transmit video data to the receiver over at least a first channel of the link (see Fig. 7, channel 1 sends video data, from Tx to Rx), and at least one of the transmitter and the receiver is configured to transmit a first stream of auxiliary data (see Channel 2, audio data transmission from Tx-Rx)over a second channel of the link to the other one of the transmitter and the receiver, and at least one of the transmitter and the receiver is configured to transmit a second stream of auxiliary data over one of the first channel of the link and a third channel of the link to the other one of the transmitter and the receiver (Channel 1, see audio data transmitted over Channel 1 during period for audio transport, when no video is sent over Channel 1), and wherein the first stream of auxiliary data comprises audio data, the transmitter is configured to transmit the first stream of auxiliary data to the receiver over the second channel of the link, and the transmitter is configured to transmit the second stream of auxiliary data to the receiver over the first channel of the

link at times when the transmitter does not transmit the video data over said first channel of the link.

With respect to claim 101, Pasqualino discloses: a transmitter (Fig. 2, transmitter paragraph [0014]); a receiver (Fig. 3, receiver paragraph [0015]); a TMDS-like communication link between the transmitter and the receiver, wherein "TMDS" denotes "transition minimized differential signaling," the link has multiple data transmission channels (Fig. 2, see right side the channels 0-2, see Fig. 7 video data channels), the transmitter is configured to transmit video data to the receiver over at least a first channel of the link (see Fig. 7, video data over channel 1 transmitted from tx to rx) , and at least one of the transmitter and the receiver is configured to transmit auxiliary data over a second channel of the link, to the other one of the transmitter and the receiver (Fig. 2, Channel C, transfer clock signal from transmitter to receiver), while at least one of the transmitter and the receiver asserts a signal over the second channel (Fig. 2, the see Fig. 2, where the transmitter asserts the ACLK signal while the PCLK signal that is transmitted over Channel C, see paragraphs [0113]-[0114]).

With respect to claim 106, Pasqualino discloses: a transmitter (Fig 2. transmitter, receiving video and audio (auxiliary) data over blocks 215 and 217 respectively paragraph [0014]); a receiver (Fig. 3, receiver, paragraph [0015]); and a TMDS-like communication link between the transmitter and the receiver, wherein "TMDS" denotes "transition minimized differential signaling," (Fig. 2 right side, TMDS link) the link

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comprises at least one video channel (see Fig. 7, video data of channel 1), the transmitter is configured to transmit video data to the receiver over the link during data transmission periods separated by blanking intervals (see Fig. 7, video data, followed by a blanking period, followed by period for audio transport) , wherein the data transmission periods include first periods each having duration within a first range (see Fig.7, video data transmission has duration within a range when both DE and A_DE signals are high (since it is understood that small delays occur when signals switch states from low to high), see paragraph [0090]) and second periods each having duration within a second range distinct from the first range (Fig. 7, when see Audio data transmission period, when DE is low and A_DE is high (that also has a duration within a range since low-to-high transitions are not ideal), paragraph [0091], see also distinct duration of first periods and second periods, paragraph [0087] where the video data are 24 bit words and the audio data are 16 bit words and Fig. 7 shows the same pixel clock used to pack the audio and video data), the transmitter is configured to transmit the video data to the receiver over the video channel only during the first periods (Fig. 7, column video data is transmitted during the first periods(when DE and A_DE are both high) and to transmit auxiliary data to the receiver over the video channel only during the second periods (Fig. 7 see Audio data transport period), the receiver is configured to recognize each of the second periods and operate in an auxiliary data reception mode during each of the second periods, and the receiver is configured to recognize each of the first periods and operate in a video data reception mode during each of the first periods (Fig. 3 the receiver, extracts A_DE and DE signals to unpack the data received over the link, see

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that receiver of Fig. 3 performs a processing opposite to the one performed by transmitted to pack that video and audio data).

With respect to claim 107 Pasqualino discloses: wherein each of the first periods has duration greater than a first duration and each of the second periods has duration not greater than the first duration (see above rejection of claim 106 where a video data word is a 24 bit word greater than the 16 bit audio bit word, and the audio data is not greater than 16 bit).

With respect to claims 110-111, these claims are rejected based on a rationale similar to the one used to reject claim 106 above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mair et. al., (U.S. 6,912,008).

With respect to claim 35, all of the limitations of claim 35 are rejected based on a rationale similar to the one used to reject claim 22. However, Mair et. al., do not expressly teach an analog auxiliary signal (only an audio auxiliary signal). However,

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audio signals are analog (or digital) signals, and therefore it would have been obvious to a person of ordinary skill in the art to modify the system of Mair et. al., so that the output signal is indicative of binary data words that determine an analog auxiliary signal as well as the video data, the rationale behind such a modification is that analog auxiliary (audio) signals do not undergo sampling/quantization that reduces their quality.

Allowable Subject Matter

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a transmitter; a receiver; and the transmitter is configured to transmit auxiliary data to the receiver by modulating DC disparity of a channel of the communication link, and wherein the receiver is configured to determine a sequence of differences between successive values of the accumulated DC disparity, thereby determining the auxiliary data, as recited in claim 3 and in combination with other elements of the claim.

Claim 3 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a transmitter; a receiver; and the transmitter is configured to transmit auxiliary data to the receiver by modulating DC disparity of a

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channel of the communication link, and wherein a sequence of differences between successive values of the DC disparity determines the auxiliary data, as recited in claims 6 and 7 and in combination with other elements of the respective claims.

Claims 6-7 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: a transmitter; a receiver; at least one of the transmitter and the receiver is configured to transmit a stream of data words determining auxiliary data over the link to the other one of the transmitter and the receiver; and a sequence of differences between successive values of the accumulated DC disparity determines the auxiliary data, as recited in claim 11 and in combination with other elements of the claim 11.

Claim 11 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: a transmitter; a receiver; at least one of the transmitter and the receiver is configured to transmit a stream of data words determining auxiliary data over the link to the other one of the transmitter and the receiver, and a data structure of each of at least a subset of the words is indicative of DC disparity, wherein a first accumulated DC disparity value followed by a second accumulated DC disparity value for two

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sequentially occurring ones of the words indicates an auxiliary data bit having a first logical value if the absolute value of the second accumulated DC disparity value is greater than the absolute value of the first accumulated DC disparity value, and an auxiliary data bit having a second logical value if the absolute value of the first accumulated DC disparity value is greater than the absolute value of the second accumulated DC disparity value, as recited in claim 13 and in combination with other elements of the claim.

Claim 13 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: a transmitter; a receiver; at least one of the transmitter and the receiver is configured to transmit a stream of data words determining auxiliary data over the link to the other one of the transmitter and the receiver, and a data structure of each of at least a subset of the words is indicative of DC disparity, wherein the values of the DC disparity include values in at least two distinct ranges of positive DC disparities and at least two distinct ranges of negative DC disparities, and wherein a sequence of differences between successive values in one of the ranges of positive DC disparities determines values of the auxiliary data but differences between successive values in another one of the ranges of positive DC disparities do not determine values of the auxiliary data. as recited in claim 14 and in combination with other elements of the claim.

Claim 14 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: a transmitter; a receiver; at least one of the transmitter and the receiver is configured to transmit a stream of encoded words over the link to the other one of the transmitter and the receiver, each of the words has a data structure and is encoded in accordance with one of a first encoding operation and a second encoding operation, and wherein the data structure of each of the words having nonzero DC disparity is indicative of whether said each of the words has been encoded in accordance with the first encoding operation or the second encoding operation, as recited in claim 23 and in combination with other elements of the claim.

Claims 23-27 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: circuitry configured for generating an output signal in response to the auxiliary data and asserting the output signal to the output for transmission over the channel, wherein the output signal is indicative of a stream of encoded data words, wherein each of the words includes a data structure and is encoded in accordance with one of a first encoding operation and a second encoding operation, the data structure of each of the words having nonzero DC disparity is indicative of whether said each of the words has been encoded in accordance with the first encoding operation or the second encoding operation, as recited in claim 28 and in combination with other elements of the claim.

Claim 28 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A method for sending data over a TMDS-like communication link, where "TMDS" denotes "transition minimized differential signaling," comprising the step of: transmitting a stream of encoded data words over at least one channel of the link, wherein each of the words is indicative of auxiliary data and includes a data structure, each of the words having nonzero DC disparity is encoded in accordance with one of a first encoding operation and a second encoding operation, each of the words having zero DC disparity is encoded in accordance with the first encoding operation, the data structure of each of the words having nonzero DC disparity is indicative of whether said each of the words has been encoded in accordance with the first encoding operation or the second encoding operation, as recited in claim 29 and in combination with other steps of the claim.

Claims 29-30 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a transmitter; a receiver; the transmitter is configured to transmit video data over the link to the receiver, wherein the video data are transmitted as a stream of binary data words that determine an analog auxiliary signal as well as the video data, wherein each of the binary data words is an encoded word that has been encoded in accordance with a first encoding operation when accumulated

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DC disparity of the stream exceeds a positive threshold, and has been encoded in accordance with a second encoding operation when the accumulated DC disparity of the stream exceeds a negative threshold, and instantaneous values of the stream's accumulated DC disparity determine the analog auxiliary signal, as recited in claim 31 and in combination with other elements of the claim.

Claims 31-32, 34 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: A receiver; a transmitter; the transmitter and the receiver are operable in a first mode in which one of the transmitter and the receiver transmits a first signal indicative of auxiliary data over the at least one multi-purpose line to the other one of the transmitter and the receiver, and the transmitter and the receiver are operable in a second mode in which one of the transmitter and the receiver transmits a second signal over the at least one multi-purpose line to the other one of the transmitter and the receiver, wherein the auxiliary data are digital audio data, wherein the at least one multi-purpose line is at least one downstream device status line, the second mode is a monitoring mode in which the transmitter monitors the at least one downstream device status line to determine whether a downstream device is coupled to the receiver, and the first mode is an auxiliary data transmission mode in which the transmitter transmits the first signal over the at least one downstream status line to the receiver, as recited in claim 37 and in combination with other elements of the claim.

Claims 37-38 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: A receiver; a transmitter; the transmitter and the receiver are operable in a first mode in which one of the transmitter and the receiver transmits a first signal indicative of auxiliary data over the at least one multi-purpose line to the other one of the transmitter and the receiver, and the transmitter and the receiver are operable in a second mode in which one of the transmitter and the receiver transmits a second signal over the at least one multi-purpose line to the other one of the transmitter and the receiver, wherein the at least one multi-purpose line is at least one power line, the second mode is a power supply mode in which the transmitter provides DC power to the receiver over the at least one power line, the link also comprises at least one digital video channel, and the first mode is a data transmission mode in which the transmitter transmits digital video data to the receiver over the digital video channel and at least one of the transmitter and the receiver transmits the first signal over the at least one power line to the other one of the transmitter and the receiver, as recited in claim 39 and in combination with other elements of the claim.

Claims 39-40 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: A receiver; a transmitter; and at least one of the receiver and a device associated with the receiver, wherein at least one of

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the transmitter and the receiver is operable in a mode in which it transmits auxiliary data over the additional channel to the other one of the transmitter and the receiver, the auxiliary data are audio data, and the additional channel is a serial bus configured to allow bidirectional communication between the transmitter and a monitor associated with the receiver, including transmission from the receiver to the transmitter of monitor identification data specifying characteristics of the monitor, as recited in claim 44 and in combination with other elements of the claim.

Claims 44-45 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; the transmitter is operable in a first mode in which it transmits video data to the receiver over a first subset of the video channels but not a second subset of the video channels, the transmitter is operable in another mode in which it transmits video data to the receiver over all of the video channels, and the transmitter is configured to transmit auxiliary data to the receiver over the second subset of the video channels during the first mode, wherein the auxiliary data are digital audio data, as recited in claim 50 and in combination with other elements of the claim.

Claim 50 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; the transmitter is configured to transmit encoded words indicative of auxiliary data to the receiver over the link, at

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least one bit of each of the encoded words determines at least one auxiliary data bit, and the remaining bits of said each of the encoded words determine a word of the video data, wherein the remaining bits of said each of the encoded words determine all bits of an in-band, TMDS-encoded word other than a transition control bit, the TMDS-encoded word has a transition control bit slot, and said at least one bit of each of the encoded words is a single auxiliary data bit transmitted in the transition control bit slot, as recited in claim 53 and in combination with other elements of the claim.

Claims 53-55 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; the transmitter is configured to transmit video data and auxiliary data to the receiver over the video channel, the video data are determined by a first set of code words, the auxiliary data are determined by a second set of code words, and none of the code words in the second set is a member of the first set, wherein each of the code words in the first set is an in-band TMDS-encoded word, and each of the code words in the second set is an out-of-band TMDS-encoded word, as recited in claim 58 and in combination with other elements of the claim.

Claim 58 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; and at least one of the transmitter and the receiver is configured to operate in a mode in which it transmits

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auxiliary data to the other of the transmitter and the receiver over the analog video channel, as recited in claim 60 and in combination with other elements of the claim.

Claims 60-62 are allowed

The prior art of the record fails to teach or suggest alone or in combination: A transmitter for use in data transmission over a TMDS-like link having at least one digital video channel and at least one analog video channel, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry, coupled to the first input and to the video input, and configured to operate in a selected one of a first mode and a second mode, and wherein in the second mode, the circuitry generates an auxiliary data signal indicative of at least some of the auxiliary data and a video signal indicative of at least some of the video data, asserts the video signal to the first output for transmission over the digital video channel, and asserts the auxiliary data signal to the second output for transmission over the analog video channel, as recited in claim 63 and in combination with other elements of the claim.

Claim 63 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A transmitter for use in data transmission over a TMDS-like link having at least one power line for providing DC power from the transmitter to another device, and at least one video channel, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry, coupled to the first input and to the video input, and configured to operate in a mode in which it generates a video signal indicative of at least

some of the video data and an auxiliary data signal indicative of at least some of the auxiliary data, asserts the video signal to the first output for transmission over the video channel, and asserts the auxiliary data signal to the second output for transmission over the power line, as recited in claim 64 and in combination with other elements of the claim.

Claim 64 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a transmitter; a receiver; the transmitter is configured to transmit video data to the receiver over at least a first channel of the link, and the receiver is configured to transmit the second stream of auxiliary data over the first channel of the link to receiver, as recited in claim 75 and in combination with other elements of the claim.

Claim 75 is allowed

The prior art of the record fails to teach or suggest alone or in combination: A communication system including: a transmitter; a receiver; at least one of the transmitter and the receiver is configured to transmit a first stream of auxiliary data over a second channel of the link to the other one of the transmitter and the receiver, and at least one of the transmitter and the receiver is configured to transmit a second stream of auxiliary data over one of the first channel of the link and a third channel of the link to the other one of the transmitter and the receiver, and wherein the first stream of auxiliary data comprises audio data, wherein the transmitter is configured to transmit the first stream

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of auxiliary data to the receiver over the second channel of the link, and the transmitter is configured to transmit the second stream of auxiliary data to the receiver over the first channel of the link at times when the transmitter does not transmit the video data over said first channel of the link, as recited in claim 78 and in combination with other elements of the claim.

Claim 78 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a transmitter; a receiver; and at least one of the transmitter and the receiver is configured to transmit a first stream of auxiliary data over a second channel of the link to the other one of the transmitter and the receiver, and at least one of the transmitter and the receiver is configured to transmit a second stream of auxiliary data over one of the first channel of the link and a third channel of the link to the other one of the transmitter and the receiver, and wherein the first stream of auxiliary data comprises audio data, the transmitter is configured to transmit the first stream of auxiliary data over the second channel while the system employs the second channel for an additional function, the transmitter is configured to transmit over the second channel a first signal having no frequency components outside a frequency range and at least one signal having no frequency components in said frequency range, and said first signal is indicative of the first stream of auxiliary data, as recited in claim 80 and in combination with other elements of the claim.

Claim 80 is allowed.

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The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a transmitter; a receiver; and the transmitter and the receiver are configured to operate in a second mode in which said one of the transmitter and the receiver asserts a second signal over the second channel to the other one of the transmitter and the receiver, wherein the auxiliary data comprise audio data, the receiver asserts the signal indicative of auxiliary data to the transmitter over the second channel during the first mode, the receiver asserts said second signal to the transmitter over the second channel during the second mode, and said second signal is indicative of presence of a device coupled to the receiver, as recited in claim 96 and in combination with other elements of the claim.

Claim 96 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a transmitter; a receiver; and the transmitter and the receiver are configured to operate in a second mode in which said one of the transmitter and the receiver asserts a second signal over the second channel to the other one of the transmitter and the receiver, wherein the auxiliary data comprise audio data, the transmitter asserts the signal indicative of auxiliary data to the receiver over the second channel during the first mode, the transmitter asserts said second signal to the receiver over the second channel during the second mode, and said second signal provides power to at least one of the receiver and a device coupled to the receiver, as recited in claim 97 and in combination with other elements of the claim.

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Claims 97-98 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A transmitter for use in data transmission over a TMDS-like link, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry, coupled between the second output and the auxiliary data input and configured to operate in a first mode in which it asserts a signal indicative of the auxiliary data to the second output in response to the auxiliary data, and to operate in a second mode in which it asserts to the output a signal capable of providing power to a device coupled to the second channel of the link, as recited in claim 100 and in combination with other elements of the claim.

Claim 100 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; and at least one of the and at least one of the transmitter and the receiver is configured to transmit a third differential signal indicative of auxiliary data to the other of the transmitter and the receiver over the conductor pairs, wherein the third differential signal is generated as a result of common mode modulation of both the first conductor pair and the second conductor pair such that the difference between common mode level of the first conductor pair and common mode level of the second conductor pair determines said

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third differential signal, as recited in claim 116 and in combination with other elements of the claim.

Claims 116-117 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A transmitter for use in data transmission over a TMDS-like link, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry coupled to the outputs and the auxiliary data input and configured to assert a differential signal indicative of the auxiliary data to the output such that modulation of the common mode level of the differential signal as a function of time is indicative of said auxiliary data, as recited in claim 118 and in combination with other elements of the claim.

Claims 118-119 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A transmitter for use in data transmission over a TMDS-like link, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry, configured to assert a first differential signal having a first common mode level to the first outputs and a second differential signal having a second common mode level to the second outputs, wherein the difference between the first common mode level and the second common mode level determines a third differential signal, and the third differential signal is indicative of the auxiliary data, as recited in claim 120 and in combination with other elements of the claim.

Claims 120-121 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; the transmitter is configured to transmit TMDS-encoded words indicative of video data and binary auxiliary data to the receiver over the link, at least some of the TMDS-encoded words are transition minimized words, at least some of the TMDS-encoded words are transition maximized words, and the receiver is configured to identify each of the transition minimized words as a first binary auxiliary data bit and to identify each of the transition maximized words as the complement of the first binary auxiliary data bit, as recited in claim 122 and in combination with other elements of the claim.

Claim 122 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A transmitter for use in data transmission over a TMDS-like link, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry, configured to assert a stream of TMDS-encoded words to the output, wherein each of the TMDS-encoded words is indicative of a bit of the auxiliary data and at least one bit of the video data, at least some of the TMDS-encoded words are transition minimized words, at least some of the TMDS-encoded words are transition maximized words, each of the transition minimized words is indicative of a first binary auxiliary data bit, and each of the transition maximized words is indicative of the complement of the first binary

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auxiliary data bit, as recited in claim 123 and in combination with other elements of the claim.

Claim 123 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; the transmitter to the receiver, the transmitter is configured to transmit the video data over a video channel when the receiver is in the operating mode, and at least one of the transmitter and the receiver is configured to transmit auxiliary data over the video channel to the other of the transmitter and the receiver when the receiver is in the locking mode, as recited in claim 124 and in combination with other elements of the claim.

Claim 124 is allowed.

The prior art of the record fails to teach or suggest alone or in combination: A communication system, including: a receiver; a transmitter; video channel, the transmitter is configured to transmit video data and auxiliary data to the receiver over the video channel, the video data are determined by a first set of code words, the auxiliary data are determined by a second set of code words, none of the code words in the second set is a member of the first set, and each of the code words in the second set is determined by a robust encoding algorithm, wherein the robust encoding algorithm maps a different cluster of the code words in the second set to each different value of the auxiliary data, each value of the auxiliary data is determined by any one of

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the code words in one said cluster, and each code word in each said cluster has identical noncritical bits and different values of a critical bit set, wherein each said critical bit set comprises at least one critical bit, and each said critical bit is subject to greater error risk in transmission and recovery than is each said noncritical bit, as recited in claim 126 and in combination with other elements of the claim.

Claims 126-129 are allowed.

The prior art of the record fails to teach or suggest alone or in combination:

A transmitter for use in data transmission over a TMDS-like link, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry, coupled to the video input, the auxiliary data input and the output, and configured to assert a stream of code words to the output in response to the video data and the auxiliary data, wherein the code words include a first set of code words and a second set of code words, each of the code words in the first set determines a word of the video data, each of the code words in the second set determines a word of the auxiliary data, none of the code words in the second set is a member of the first set, and each of the code words in the second set is determined by a robust encoding algorithm, wherein each of the code words in the first set is an in-band TMDS-encoded word, each of the code words in the second set is an out-of-band TMDS-encoded word, as recited in claim 131, and in combination with other elements of the claim.

Claim 131 is allowed.

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The prior art of the record fails to teach or suggest alone or in combination:

A communication system, including: a transmitter; the transmitter is configured to transmit video data and auxiliary data to the receiver over the video channel, each word of the video data is determined by a code word of a first set of code words, each word of the auxiliary data is determined by a code word of a second set of code words, none of the code words in the second set is a member of the first set, and the transmitter is configured to transmit a sequence of N identical code words of the second set to indicate each word of the auxiliary data, where N is an integer greater than one, as recited in claim 132 and in combination with other elements of the claim.

Claims 132-141 are allowed.

The prior art of the record fails to teach or suggest alone or in combination: A transmitter for use in data transmission over a TMDS-like link, where "TMDS" denotes "transition minimized differential signaling," said transmitter including: circuitry, coupled to the video input, the auxiliary data input and the output, and configured to assert a stream of code words to the output in response to the video data and the auxiliary data, wherein the code words include a first set of code words and a second set of code words, each of the code words in the first set determines a word of the video data, a sequence of N identical ones of the code words in the second set determines a word of the auxiliary data, N is an integer greater than one, and none of the code words in the second set is a member of the first set, as recited in claim 142 and in combination with other elements of the claim.

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Claims 142-143 are allowed.

10. Claims 73, 77, 102-105, 108-109 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 73 should also be corrected for the minor informality as pointed above in the claim objection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOPHIA VLAHOS whose telephone number is (571)272-5507. The examiner can normally be reached on MTWRF 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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